



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,955	07/07/2003	Slawomir Rubinsztajn	130129	6777

7590 09/16/2005

General Electric Company
CRD Patent Docket Rm 4A59
Bldg. K-1
P.O. Box 8
Schenectady, NY 12301

EXAMINER

FEELY, MICHAEL J

ART UNIT	PAPER NUMBER
----------	--------------

1712

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/613,955

Applicant(s)

RUBINSZTAJN ET AL.

Examiner

Michael J. Feely

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-19 and 21-34 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 17 and 34 is/are allowed.
6) ☒ Claim(s) 1,2,4-11,14,16,18,19,21-28,31 and 33 is/are rejected.
7) ☒ Claim(s) 12,13,15,29,30 and 32 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Pending Claims

Claims 1, 2, 4-19, and 21-34 are pending.

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. The rejection of claims 1, 2, 3, 5, 6, 8, 10, 11, and 15 under 35 U.S.C. 102(b) as being anticipated by Crivello (US 6,210,790) has been overcome by amendment.
3. The rejection of claims 3 and 20 under 35 U.S.C. 102(e) as being anticipated by Campbell et al. (Pub. No. US 2004/0102529 A1) has been rendered moot by the cancellation of these claims.
4. The rejection of claims 1, 2, 4-11, 14, 18, 19, 21-28, and 31 under 35 U.S.C. 102(e) as being anticipated by Campbell et al. (Pub. No. US 2004/0102529 A1) stands for the reasons of record.

Regarding claims 1, 2, 4-11 and 14, Campbell et al. disclose: *(I)* a curable epoxy formulation comprising at least one epoxy monomer (paragraphs 0006 and 0012-0024); at least one alkyl onium cure catalyst (paragraphs 0006 and 0032-0033), at least one colloidal silica organofunctionalized with an organoalkoxysilane of the following formula:



wherein R^7 is independently at each occurrence a C_{1-18} monovalent hydrocarbon radical optionally further functionalized with an alkyl acrylate, alkyl methacrylate, C_{6-14} aryl radical, or

Art Unit: 1712

alkyl radical; R^8 is independently at each occurrence a C_{1-18} monovalent hydrocarbon radical or a hydrogen radical; and “a” is a whole number equal to 1 to 3 inclusive (paragraphs 0006 and 0025-0029);

(2) wherein the organofunctional colloidal silica comprises up to about 80 weight % of a silicon dioxide, based on the total weight of the total curable epoxy formulation (paragraph 0025);

(4) wherein the organoalkoxysilane comprises phenyltrimethoxysilane (paragraph 0027);

(5) wherein the colloidal silica is further treated with an acid, basic, or ion exchange resin (paragraphs 0028-0029); (6) wherein the colloidal silica is treated with a basic resin (paragraph 0029; page 7: Table 4); (7) wherein the basic resin comprises crosslinked polyvinylpyridine (paragraph 0029; page 7: Table 4);

(8) further comprising at least one organic diluent (paragraph 0043); (9) wherein the organic diluent comprises 3-ethyl-3-hydroxymethyl-oxetane (paragraph 0043);

(10) wherein the epoxy monomer comprises a cycloaliphatic epoxy monomer, an aliphatic epoxy monomer, an aromatic epoxy monomer, a silicone epoxy monomer or combinations thereof (paragraphs 0013-0024);

(11) wherein the alkyl onium cure catalyst comprises an alkyl sulfonium cure catalyst (paragraph 0032); and

(14) wherein the cured formulation provided a coefficient of thermal expansion of below about 70 $\text{pm}/^\circ\text{C}$ (paragraph 0012).

Art Unit: 1712

Regarding claims 18, 19, 21-28, and 31, Campbell et al. disclose: **(18)** a solid state device comprising an encapsulant (paragraphs 0012 and 0048-0049), wherein said encapsulant comprises at least one epoxy monomer (paragraphs 0006 and 0012-0024), at least one alkyl onium cure catalyst (paragraphs 0006 and 0032-0033), at least one colloidal silica organofunctionalized with an organoalkoxysilane of the following formula:



wherein R^7 is independently at each occurrence a C_{1-18} monovalent hydrocarbon radical optionally further functionalized with an alkyl acrylate, alkyl methacrylate, C_{6-14} aryl radical, or alkyl radical; R^8 is independently at each occurrence a C_{1-18} monovalent hydrocarbon radical or a hydrogen radical; and “a” is a whole number equal to 1 to 3 inclusive (paragraphs 0006 and 0025-0029);

(19) wherein the organofunctional colloidal silica comprises up to about 80 weight % of a silicon dioxide, based on the total weight of the total curable epoxy formulation (paragraph 0025);

(21) wherein the organoalkoxysilane comprises phenyltrimethoxysilane (paragraph 0027);

(22) wherein the colloidal silica is further treated with an acid, basic, or ion exchange resin (paragraphs 0028-0029); **(23)** wherein the colloidal silica is treated with a basic resin (paragraph 0029; page 7: Table 4); **(24)** wherein the basic resin comprises crosslinked polyvinylpyridine (paragraph 0029; page 7: Table 4);

(25) further comprising at least one organic diluent (paragraph 0043); **(26)** wherein the organic diluent comprises 3-ethyl-3-hydroxymethyl-oxetane (paragraph 0043);

Art Unit: 1712

(27) wherein the epoxy monomer comprises a cycloaliphatic epoxy monomer, an aliphatic epoxy monomer, an aromatic epoxy monomer, a silicone epoxy monomer or combinations thereof (paragraphs 0013-0024);

(28) wherein the alkyl onium cure catalyst comprises an alkyl sulfonium cure catalyst (paragraph 0032); and

(31) wherein the cured formulation provided a coefficient of thermal expansion of below about 70 pm/^oC (paragraph 0012).

Claim Rejections - 35 USC § 102/103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. The rejection of claims 14 and 16 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Crivello (US Pat. No. 6,210,790) has been overcome by amendment.
7. The rejection of claims 16 and 33 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Campbell et al. (Pub. No. US 2004/0102529 A1) stands for the reasons of record.

Regarding claims 16 and 33, Campbell et al. do not explicitly disclose: *(16 & 33)* wherein the cured formulation provides an optical transmission of at least about 80% at 400 nanometers. However, it has been found that "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties

Art Unit: 1712

applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Therefore, it appears that these limitations would have been inherently present in the teachings of Campbell et al.

Claim Rejections - 35 USC § 103

8. The rejection of claims 15 and 32 under 35 U.S.C. 103(a) as being unpatentable over Campbell et al. (Pub. No. US 2004/0102529 A1) in view of Wensel (US Pat. No. 5,959,349), has been overcome by a statement of common ownership (*see the end of section III on page 12 of the response*).

Allowable Subject Matter

9. Claims 17 and 34 are allowed.

10. Claims 12, 13, 15, 29, 30 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 17 and 34, Campbell et al. is the closest prior art; however they fail to teach or suggest a combination of: (a) an epoxy monomer, (b) phenyltrimethoxysilane functionalized colloidal silica, and (c) a cure catalyst comprising 3-methyl-2-butenyltetramethylene sulfonium hexafluoroantimonate. They teach the use of sulfonium

Art Unit: 1712

catalysts, but they are silent regarding 3-methyl-2-butenyltetramethylene sulfonium hexafluoroantimonate.

Regarding claims 12, 13, 29, and 30, Campbell et al. is the closest prior art. They disclose the use of sulfonium catalysts; however they are silent regarding the use of 3-methyl-2-butenyltetramethylene sulfonium hexafluoroantimonate or substituted aryl-dialkyl sulfonium hexafluoroantimonate.

Regarding claims 15 and 32, Campbell et al. is the closest prior art; however, they do not explicitly disclose the use optional reagents that comprise anti-oxidants, mold releasing additives, plasticizing additives, or combinations thereof.

Response to Arguments

12. Applicant's arguments filed June 30, 2005 have been fully considered but they are not persuasive.

With respect to the 102(e) rejections over the Campbell et al. reference, Applicants argue that Campbell et al. require further functionalizing of the functionalized colloidal silica with a capping agent, and "The colloidal silica of Applicants' claim 1 is **only** organofunctionalized with an organoalkoxysilane, eliminating the capping agent functionalization." In other words, Applicant takes the position that their colloidal silica is only functionalized with organoalkoxysilane, and their claims exclude the presence of further functionalization with a capping agent.

Firstly, the claim language does not exclude further functionalization with a capping agent. Secondly, Campbell et al. does not require the further functionalization with a capping

Art Unit: 1712

agent. When discussing the use of capping agents in paragraph 0030, Campbell et al. explicitly states, "In some instances, the pre-dispersion or the final dispersion of the functionalized colloidal silica *may be* further functionalized." It is understood that Campbell et al. prefer the capped embodiment; however, Applicant is reminded that patents are relevant as prior art for all they contain, and that non-preferred embodiments constitute prior art – *see MPEP 2123*.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

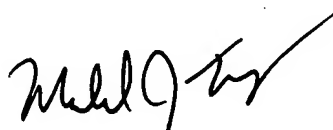
Art Unit: 1712

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael J. Feely
Primary Examiner
Art Unit 1712

September 14, 2005